Background

Dhushan's Dazzling Socks Company is a high-end online sock retailer. They specialize in top-quality socks, for professionals and anyone who appreciates a well-made sock. As most of the clientele are paying higher than average prices for socks, Dhushan is very concerned about protecting the brand of the company.

The Challenge

One challenge of being an exclusively online retailer is finding ways to provide quality customer service. Dhushan's Dazzling Socks Company has set up a 24/7 call centre in order to address any issues customers may have about their orders (quality assurance, wrong sizing, complaints, etc.). After a recent shipping error, Dhushan's analytics team noted higher than normal call volumes. After an investigation, it came to Dhushan's attention that his call centre reps may not be doing enough to improve the perception of the brand during these customer interactions.

Dhushan hired you (BEworks) to help his call centre reps improve the quality of their service. After a lengthy Discovery process examining Dhushan's company, BEworks offered two suggested approaches:

Approach 1: Human-Focused Call Centre

If Dhushan's company implemented Approach 1, call reps would be trained to use greater amounts of empathy and active listening to improve the relationship between caller and call rep.

BEworks' hypothesis is that if customers have a more positive experience with the call reps, it will improve their perception of Dhushan's Dazzling Sock Company.

Approach 2: Incentive-Based Approach

In Approach 2, call reps are instructed to tell callers at the very end of the call that they will be entered into a free socks for life contest.

BEworks' hypothesis is that if customers are offered a chance to win a contest at the end of the call, this will improve their perception of Dhushan's Dazzling Sock Company.

The Experiment

Of the two approaches, Dhushan was concerned that Approach 1 (Human-Focused Call Centre) would be too expensive to implement and estimated it would cost $1,000 per employee per year. On the other hand, Approach 2 (Incentive-Based Approach) would only cost roughly $1,000 total per year.

Dhushan and BEworks decided to conduct an experiment to compare the effectiveness of each approach.

Currently there are 80 call centre workers, 40 of which were trained using the human-focused approach, the other 40 were not trained using the human-focused approach. Within these two groups, half were told to use the incentive-based approach at the end of the call, while the other half were not. The call centre workers were assigned randomly.

The experiment ran for two weeks. After calling the call centre, customers were sent an e-mail with a survey link and a n-digit number. Respondents filled out the survey to give feedback about Dhushan's Dazzling Sock Company and the n-digit number corresponded to which experimental group (method) was used.

You have been provided with the dataset for this survey

Your Task

Do your best to answer the following 3 research questions using the dataset provided.

1) *Which approach (or combination) had the most positive impact on a customer's perception of Dhushan's Dazzling Sock Company?*

2) *Which approach (or combination) had the most positive impact on a customer's comprehension of Dhushan's Dazzling Sock Company's products and services?*

3) *Which method (or combination) had the highest likelihood of customers recommending DDS to their friends?*

Answer the three research questions and provide a final recommendation to Dhushan. *You are expected to use statistical analyses and visualizations in order to make your case to Dhushan regarding how he should proceed. Please submit your assignment in a format you deem appropriate; however, be sure to include code, syntax or any supporting material.*

How you will be evaluated

You will be evaluated on 5 criteria

Statistical Rigour

At BEworks we strive for the highest quality methods for the given research question. We expect candidates to not just apply the appropriate statistical methods, but to be able to explain and justify their selections.

Hypothesis-Driven Scientific Approach

P-hacking is bad. We are looking for candidates who lead with theory and don't go fishing arbitrarily for correlations. We want candidates who are honest about which questions they can answer and which questions they cannot.

Reproducibility

Could someone reproduce your analysis? It is important to us that someone else can take your script or process and replicate the exact findings. Consideration will be given to candidates who submit their analysis with a well-commented script/syntax to reproduce their results.

Communication

Statistical rigour is great, but it doesn't help if you can't communicate what a coefficient means to a lay audience. We are looking for a candidate who can translate statistical terminology to anyone that doesn't have a stats background.

Overall Presentation

Finally, we care about conscientiousness. We are looking for candidates who take pride in the quality and presentation of their work.